

What is claimed is:

~~1. A polyester polyol based resin blend comprising:~~

(a) an aromatic polyester polyol formed by an inter-esterification reaction between

(i) a phthalic acid based material;

(ii) a hydroxylated material having a functionality of at least 2; and

(iii) a hydrophobic material having:

(1) from one to six radicals, the radicals being selected from the group consisting of carboxylic acid groups, carboxylic acid ester groups, hydroxyl groups, and mixtures thereof;

(2) hydrocarbon groups comprising a total of at least 4 carbon atoms for each radical present in the hydrophobic material; and

(3) an average molecular weight of from about 100 to 1000; and

(b) a nonionic surfactant; and

~~(c) a C<sub>4</sub>-C<sub>7</sub> hydrocarbon blowing agent.~~

2. A blend according to claim 1, wherein the amount of the phthalic acid residue relative to the amount of the hydroxylated material is selected such that the aromatic polyester polyol has a hydroxyl number of between 100 and 600.

3. A blend according to claim 1, wherein the amount of the hydrophobic material in the aromatic polyester polyol is from about 1-50% by weight, based on the total weight of the aromatic polyester polyol.

4. A blend according to claim 1, wherein the amount of the aromatic polyester polyol (a), based on the combined weight of the aromatic polyester polyol (a) and the nonionic surfactant (b), is from about 70-99% by weight.

5. A blend according to claim 1, wherein the amount of the nonionic surfactant (b), based on the combined weight of the aromatic polyester polyol (a) and the nonionic surfactant (b), is from about 1-30% by weight.

6. A blend according to claim 1, wherein the combined amount of the aromatic polyester polyol (a) and the nonionic surfactant (b), based on the total weight of components (a), (b), and (c), is from about 65-99% by weight.

7. A blend according to claim 1, wherein the amount of the hydrocarbon blowing agent based on the total weight of the blend is from about 1-35% by weight.

8. A blend according to claim 2, wherein the combined amount of the aromatic polyester polyol (a) and the nonionic surfactant (b), based on the total weight of, components (a), (b), and (c), is from about 65-99% by weight; and the hydroxylated material is selected from the group consisting of ethylene glycol, propylene glycol, dipropylene glycol, trimethylene glycol, butylene glycols, 1,2-cyclohexanediol, poly(oxyalkylene)polyols derived by the condensation of ethylene oxide, propylene oxide, or any combination thereof, glycerol, 1,1,1-trimethylolpropane, 1,1,1-trimethylolethane, 2,2-dimethyl-1,3-propane diol, pentaerythritol, and mixtures thereof.

8 ~~8~~ A ~~blend~~ according to claim ~~8~~, wherein the hydrophobic material is selected from the group consisting of castor oil, coconut oil, corn oil, cottonseed oil, linseed oil, olive oil, palm oil, palm kernel oil, peanut oil, soybean oil, sunflower oil, tall oil, tallow, and mixtures thereof.

5 9 ~~10~~ A blend according to claim ~~9~~, wherein the phthalic acid based material is phthalic anhydride and the hydroxylated material is diethylene glycol.

10 10 ~~11~~ A blend according to claim ~~10~~, wherein the phthalic acid based material is phthalic anhydride and the hydroxylated material is triethylene glycol.

10 11 ~~12~~ A blend according to claim ~~11~~, wherein the hydrocarbon blowing agent is a pentane.

15 12 ~~13~~ A blend according to claim ~~12~~, wherein the hydrocarbon blowing agent is a pentane.

13 13 ~~14~~ A polyurethane or polyisocyanurate foam formed by the reaction of a polyisocyanate with the blend of claim 1.

20 14 ~~15~~ A method for preparing a rigid closed cell polyisocyanate-based foam, comprising reacting an organic aromatic polyisocyanate and a polyol in the presence of a nonionic surfactant from 14 to about 35 parts per hundred parts of all polyols of and a C<sub>4</sub>-C<sub>7</sub> aliphatic or cycloaliphatic hydrocarbon blowing agent, where the polyol resin blend comprises an aromatic polyester polyol formed by an inter-esterification reaction between (i) a

phthalic acid <sup>based material;</sup> ~~based material~~; (ii) a hydroxylated material having a functionality of at least 2; and  
<sup>less than 40 % by weight of</sup>  
(iii) ~~a~~ hydrophobic material having

(1) from one to six radicals, the radicals being selected from the group consisting of carboxylic acid groups, carboxylic acid ester groups, hydroxyl groups, and mixtures thereof; and

5 (2) hydrocarbon groups comprising a total of at least 4 carbon atoms for each radical present in the hydrophobic material; and

(3) an average molecular weight of from about 100 to 1000.